# BioMap and Living Waters

## Guiding Land Conservation for Biodiversity in Massachusetts

# Core Habitats of Middleborough

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

**Natural Heritage & Endangered Species Program**
**Massachusetts Division of Fisheries and Wildlife**
**Executive Office of Environmental Affairs**
**Commonwealth of Massachusetts**

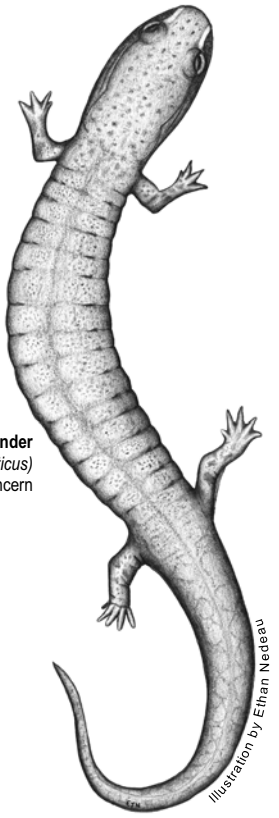
Produced in 2004

# BioMap and Living Waters:
## Guiding Land Conservation for Biodiversity in Massachusetts

## Table of Contents



* Depending on the location of Core Habitats, your city or town may not have all of these sections.




**Spring Salamander**
*(Gyrinophilus porphyriticus)*
Species of Special Concern


*Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.*



**Natural Heritage & Endangered Species Program**

**Massachusetts Division of Fisheries and Wildlife**
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org


*For more information on rare species and natural communities, please see our fact sheets online at* ***www.nhesp.org***

# BioMap and Living Waters:
## Guiding Land Conservation for Biodiversity in Massachusetts

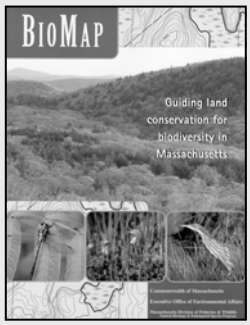
## Introduction

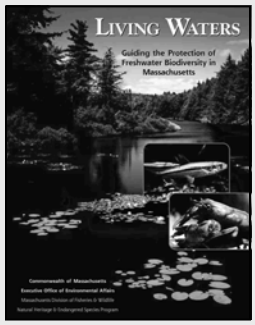
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

### What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.




Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

### Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

### In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

**Natural Heritage & Endangered Species Program**

**Massachusetts Division of Fisheries and Wildlife**
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

## Understanding Core Habitat Species, Community, and Habitat Lists

### What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

**Table 1.** The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

**BioMap**

| | Species and Verified Natural Community Types | |
|---|---|---|
| **Biodiversity Group** | **Included in BioMap** | **Total Statewide** |
| Vascular Plants | 246 | 1,538 |
| Birds | 21 | 221 breeding species |
| Reptiles | 11 | 25 |
| Amphibians | 6 | 21 |
| Mammals | 4 | 85 |
| Moths and Butterflies | 52 | An estimated 2,500 to 3,000 |
| Damselflies and Dragonflies | 25 | An estimated 165 |
| Beetles | 10 | An estimated 2,500 to 4,000 |
| Natural Communities | 92 | > 105 community types |

**Living Waters**

| | Species | |
|---|---|---|
| **Biodiversity Group** | **Included in Living Waters** | **Total Statewide** |
| Aquatic Vascular Plants | 23 | 114 |
| Fishes | 11 | 57 |
| Mussels | 7 | 12 |
| Aquatic Invertebrates | 23 | An estimated > 2500 |

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

## What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

**Legal Protection of Biodiversity**

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

**Natural Heritage & Endangered Species Program**

**Massachusetts Division of Fisheries and Wildlife**
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

## Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

## Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

### Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

### Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

*by Phone* *508-792-7270, Ext. 200*

*by Fax:* *508-792-7821*

*by Email:* *natural.heritage@state.ma.us*.

*by Mail:* *North Drive*
*Westborough, MA 01581*

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!



**Massachusetts Division of Fisheries and Wildlife**
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

# BioMap: Species and Natural Communities

## Middleborough

### Core Habitat BM1176

#### Natural Communities

| Common Name | Scientific Name | Status |
|---|---|---|
| Alluvial Atlantic White Cedar Swamp | | Imperiled |
| Alluvial Red Maple Swamp | | Vulnerable |
| Red Maple Swamp | | Secure |

#### Plants

| Common Name | Scientific Name | Status |
|---|---|---|
| Long-Leaved Panic-Grass | *Panicum rigidulum ssp pubescens* | Threatened |
| Pale Green Orchis | *Platanthera flava var herbiola* | Threatened |

#### Vertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| American Bittern | *Botaurus lentiginosus* | Endangered |
| Blanding's Turtle | *Emydoidea blandingii* | Threatened |
| Common Moorhen | *Gallinula chloropus* | Special Concern |
| Eastern Box Turtle | *Terrapene carolina* | Special Concern |
| Eastern Spadefoot | *Scaphiopus holbrookii* | Threatened |
| Four-toed Salamander | *Hemidactylium scutatum* | Special Concern |
| Grasshopper Sparrow | *Ammodramus savannarum* | Threatened |
| King Rail | *Rallus elegans* | Threatened |
| Long-eared Owl | *Asio otus* | Special Concern |
| Northern Red-bellied Cooter | *Pseudemys rubriventris* | Endangered |
| Pied-Billed Grebe | *Podilymbus podiceps* | Endangered |
| Spotted Turtle | *Clemmys guttata* | Special Concern |
| Upland Sandpiper | *Bartramia longicauda* | Endangered |
| Wood Turtle | *Clemmys insculpta* | Special Concern |

# BioMap: Species and Natural Communities

## Middleborough

### Core Habitat BM1190

#### Natural Communities

| Common Name | Scientific Name | Status |
|---|---|---|
| Coastal Plain Pondshore | | Imperiled |
| Pitch Pine - Scrub Oak Community | | Imperiled |
| Red Maple Swamp | | Secure |
| Sandplain Heathland | | Critically Imperiled |
| Scrub Oak Shrubland | | Critically Imperiled |

#### Plants

| Common Name | Scientific Name | Status |
|---|---|---|
| Broom Crowberry | *Corema conradii* | Special Concern |
| Inundated Horned-Sedge | *Rhynchospora inundata* | Threatened |
| Long-Beaked Bald-Sedge | *Rhynchospora scirpoides* | Special Concern |
| New England Blazing Star | *Liatris scariosa var. novae-angliae* | Special Concern |
| New England Boneset | *Eupatorium leucolepis var novae-angliae* | Endangered |
| Plymouth Gentian | *Sabatia kennedyana* | Special Concern |
| Pondshore Knotweed | *Polygonum puritanorum* | Special Concern |
| Pondshore-dodder | *Cuscuta coryli* | Watch Listed |
| Redroot | *Lachnanthes caroliana* | Special Concern |
| Reticulate Nut-Sedge | *Scleria reticularis* | Watch Listed |
| Short-Beaked Bald-Sedge | *Rhynchospora nitens* | Threatened |
| Swamp Oats | *Sphenopholis pensylvanica* | Threatened |
| Terete Arrowhead | *Sagittaria teres* | Special Concern |
| Torrey's Beak-Sedge | *Rhynchospora torreyana* | Endangered |
| Walter's Sedge | *Carex striata* | Endangered |
| Wright's Panic-grass | *Dichanthelium wrightianum* | Special Concern |

# BioMap: Species and Natural Communities

## Middleborough

### Invertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Attenuated Bluet | *Enallagma daeckii* | Special Concern |
| Barrens Buckmoth | *Hemileuca maia* | Special Concern |
| Barrens Daggermoth | *Acronicta albarufa* | Threatened |
| Blueberry Sallow | *Apharetra dentata* | ---------- |
| Buchholz's Gray | *Hypomecis buchholzaria* | Endangered |
| Chain Dot Geometer | *Cingilia catenaria* | Special Concern |
| Coastal Heathland Cutworm | *Abagrotis nefascia benjamini* | Special Concern |
| Coastal Plain Apamea Moth | *Apamea mixta* | Special Concern |
| Coastal Swamp Metarranthis Moth | *Metarranthis pilosaria* | Special Concern |
| Comet Darner | *Anax longipes* | Special Concern |
| Drunk Apamea Moth | *Apamea inebriata* | Special Concern |
| Frosted Elfin | *Callophrys irus* | Special Concern |
| Gerhard's Underwing Moth | *Catocala herodias gerhardi* | Special Concern |
| Hessel's Hairstreak | *Callophrys hesseli* | Special Concern |
| Melsheimer's Sack Bearer | *Cicinnus melsheimeri* | Threatened |
| New England Bluet | *Enallagma laterale* | Special Concern |
| Pale Green Pinion Moth | *Lithophane viridipallens* | Special Concern |
| Pine Barrens Bluet | *Enallagma recurvatum* | Threatened |
| Pine Barrens Itame | *Itame sp. 1 near inextricata* | Special Concern |
| Pine Barrens Zale | *Zale sp. 1 near lunifera* | Special Concern |
| Pine Barrens Zanclognatha | *Zanclognatha martha* | Threatened |
| Pink Sallow | *Psectraglaea carnosa* | Special Concern |
| Pitcher Plant Borer Moth | *Papaipema appassionata* | Threatened |
| Purple Tiger Beetle | *Cicindela purpurea* | Special Concern |
| Sensitive Rare Invertebrate | | |
| Slender Clearwing Sphinx Moth | *Hemaris gracilis* | Special Concern |

| | | |
|---|---|---|
| Spartina Borer Moth | *Spartiniphaga inops* | Special Concern |
| Spiny Oakworm | *Anisota stigma* | Special Concern |
| Unexpected Cycnia | *Cycnia inopinatus* | Threatened |
| Water-Willow Stem Borer | *Papaipema sulphurata* | Threatened |
| Waxed Sallow Moth | *Chaetaglaea cerata* | Special Concern |

### Vertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Eastern Box Turtle | *Terrapene carolina* | Special Concern |
| Grasshopper Sparrow | *Ammodramus savannarum* | Threatened |
| Grassland Bird Habitat | | ---------- |
| Northern Red-bellied Cooter | *Pseudemys rubriventris* | Endangered |
| Pine Barrens Bird Habitat | | ---------- |
| Spotted Turtle | *Clemmys guttata* | Special Concern |

## Core Habitat BM1205

### Natural Communities

| Common Name | Scientific Name | Status |
|---|---|---|
| Coastal Atlantic White Cedar Swamp | | Imperiled |

### Invertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Water-Willow Stem Borer | *Papaipema sulphurata* | Threatened |

### Vertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Spotted Turtle | *Clemmys guttata* | Special Concern |

## Core Habitat BM1208

### Natural Communities

| Common Name | Scientific Name | Status |
|---|---|---|
| Forest Seep Community | | Secure |

# BioMap: Species and Natural Communities

## Middleborough

### Plants

| Common Name | Scientific Name | Status |
|---|---|---|
| Plymouth Gentian | *Sabatia kennedyana* | Special Concern |
| Pondshore Knotweed | *Polygonum puritanorum* | Special Concern |
| Round-Fruited False-Loosestrife | *Ludwigia sphaerocarpa* | Endangered |

### Vertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| American Bittern | *Botaurus lentiginosus* | Endangered |
| Bald Eagle | *Haliaeetus leucocephalus* | Endangered |
| Eastern Box Turtle | *Terrapene carolina* | Special Concern |
| King Rail | *Rallus elegans* | Threatened |
| Northern Parula | *Parula americana* | Threatened |
| Pied-Billed Grebe | *Podilymbus podiceps* | Endangered |
| Spotted Turtle | *Clemmys guttata* | Special Concern |
| Wood Turtle | *Clemmys insculpta* | Special Concern |

## Core Habitat BM1225

### Natural Communities

| Common Name | Scientific Name | Status |
|---|---|---|
| Alluvial Red Maple Swamp | | Vulnerable |
| Atlantic White Cedar Bog | | Imperiled |
| Coastal Atlantic White Cedar Swamp | | Imperiled |
| Kettlehole Level Bog | | Imperiled |
| Red Maple Swamp | | Secure |

### Plants

| Common Name | Scientific Name | Status |
|---|---|---|
| Gypsywort | *Lycopus rubellus* | Endangered |

# BioMap: Species and Natural Communities

## Middleborough

### Invertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| New England Bluet | *Enallagma laterale* | Special Concern |
| Water-Willow Stem Borer | *Papaipema sulphurata* | Threatened |

### Vertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Four-toed Salamander | *Hemidactylium scutatum* | Special Concern |
| Spotted Turtle | *Clemmys guttata* | Special Concern |

# BioMap: Core Habitat Summaries

## Middleborough

### Core Habitat BM1176

This large and diverse Core Habitat encompasses habitat for state-listed rare plants, amphibians, reptiles, marsh birds, and grassland birds. It includes over 10 miles of the Taunton River and substantial reaches of several of its tributaries. Also included are a variety of forested wetlands, including several large Alluvial Red Maple Swamps. Much of this key Core Habitat remains unprotected.

#### Natural Communities

This Core Habitat contains a variety of forested swamps. It includes several large Alluvial Red Maple Swamps with intact hydrology and minimal disturbances. Alluvial Red Maple Swamps are a type of Red Maple Swamp that occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, resulting in an unusual set of associated trees and plants. One of the swamps in this complex is influenced by seepage and described as the only known one of its kind in the state.

#### Plants

A population of the Threatened Pale Green Orchis is found along a vernal pool near the Taunton River.

#### Vertebrates

This Core Habitat encompasses significant riverine, wetland, and upland habitats for Red-bellied, Blanding's, Wood, Spotted, and Eastern Box Turtles. Significant habitat for Four-toed Salamanders is also present. Two important areas of freshwater marsh provide habitat for rare birds, including Pied-billed Grebes, American Bitterns, and King Rails. Significant breeding habitat for Upland Sandpipers and Grasshopper Sparrows is also present. Relatively large areas of habitat exist in this Core Habitat for birds of forested wetlands. Over 90% of this large and diverse area is unprotected, and management may be needed to mitigate the fragmentation effects of several paved roads that impair wetland and riparian connectivity. Further, grasslands in the area need annual mowing and, ideally, occasional burning.

# BioMap: Core Habitat Summaries

## Middleborough

### Core Habitat BM1190

This Core Habitat, centered on Myles Standish State Forest, contains the largest contiguous area of the globally significant Pitch Pine-Scrub Oak natural community remaining in the Northeast. This and other natural communities within the Core Habitat support a diversity of rare plants and animals, including no fewer than 33 rare invertebrate species of moths, butterflies, dragonflies, damselflies, and tiger beetles, as well as several globally rare plants adapted to Coastal Plain pondshores. The Core Habitat supports rare birds, salamanders, and turtles, including state's largest known population of the Northern Red-bellied Cooter turtle. The size and quality of this Core Habitat make it the best hope for the long-term survival of rare pine barrens species in New England. Although anchored by the large Myles Standish State Forest, the majority of this Core Habitat remains unprotected.

#### Natural Communities

This large Core Habitat contains the globally significant Pitch Pine-Scrub Oak community centered in Myles Standish State Forest. At almost 17,000 acres, this is the largest of its kind remaining in the Northeast. Pitch Pine-Scrub Oak communities are globally rare, fire dependant, shrub-dominated communities with scattered to dense trees. They provide habitat for many rare species, and develop on dry, poor soils, usually made up primarily of sand. This Core Habitat includes many other, smaller, rare community types within the predominant Pitch Pine-Scrub Oak community, including 15 acres of Scrub Oak Shrublands and 50 acres of Sandplain Heathlands in various-sized frost pockets and openings. This entire complex of natural communities is fire dependent and supports many fire-adapted species. Also, over two dozen Coastal Plain Pondshore communities of various sizes and quality are scattered throughout the Core Habitat. All of these natural communities are associated with state-listed plant and animal species.

#### Plants

This Core Habitat is rich in rare plant species adapted to the shorelines of Coastal Plain ponds. Two of the most viable populations in the state of the globally rare New England Boneset are found along pondshores in this Core Habitat, as are five outstanding populations of Terete Arrowhead (Species of Special Concern). Several rare and interesting members of the sedge family are found here, including four species of rare beak-sedges, one Endangered sedge species, and an uncommon nut-rush. The beautiful Plymouth Gentian, while abundant in this Core Habitat area, is a rare species globally.

### Invertebrates

This area is Core Habitat for no fewer than 33 invertebrate species that are listed as Endangered, Threatened, or Species of Special Concern in Massachusetts, including 27 species of moths and butterflies, four species of dragonflies and damselflies, and two species of tiger beetles. Three of these species are found nowhere else in Massachusetts, and many of them have their largest and most viable populations within this Core Habitat. Besides barrens species such as the Persius Duskywing butterfly, Melsheimer's Sack Bearer moth, and the Barrens Daggermoth, this Core Habitat includes many other habitats for rare invertebrates, including heathlands inhabited by species such as the Slender Clearwing Sphinx moth and the Pink Sallow moth; acidic shrub swamps and bogs that are habitat for the Pale Green Pinion moth, the Coastal Swamp Metarranthis moth, and the Water-willow Stem Borer moth; and Coastal Plain ponds inhabited by the Comet Darner dragonfly and the Pine Barrens Bluet damselfly.

### Vertebrates

This Core Habitat encompasses Myles Standish State Forest and over nine square miles of uplands, wetlands, ponds, and cranberry bogs. The area contains habitat for the largest known population of the Northern Red-bellied Cooter turtle (formerly known as the Plymouth Red-bellied Turtle) in the state. Given the large size of the Core Habitat, it also may be one of the most important areas for the Eastern Box Turtle in the state, and it contains habitat for Spotted Turtles, and likely Four-toed and Blue-spotted Salamanders. It also contains some of the largest areas of pitch pine - scrub oak bird habitat remaining in New England. The managed grasslands at Plymouth Municipal Airport provide habitat for Grasshopper Sparrows and other grassland birds. Annual or bi-annual mowing is needed to maintain grassland habitat at the airport, with minimal mowing between May 1 and July 31 to reduce the mortality of eggs and chicks.

## Core Habitat BM1205

The highlights of this Core Habitat include one the state's largest and highest-quality Coastal Atlantic White Cedar Swamps, wetland habitats for the rare Water-willow Stem Borer moth, and a mix of upland and wetland habitats important for Spotted Turtles, and likely other rare reptiles and amphibians. Further conservation of unprotected lands around the perimeter of the Rocky Gutter Wildlife Management Area would help ensure the long-term survival of the rare species found here.

### Natural Communities

The part of this Core Habitat in Middleborough contains one of the largest and highest-quality Coastal Atlantic White Cedar Swamps in the state. Coastal Atlantic White Cedar Swamps are acidic, low nutrient basin swamps dominated by Atlantic White Cedar in the overstory and a mixture of species in the understory. This community type typically occurs in basins on the Atlantic Coastal Plain. This Swamp has excellent structural diversity with pit and mound topography, and no invasive exotic species or unnatural disturbances. It is well-buffered within a relatively intact watershed and over 2000 acres of upland forest.

### Invertebrates

Dispersed throughout this Core Habitat are shallow wetlands with Water-willow inhabited by the Water-willow Stem Borer moth, a Threatened species found nowhere in the world outside of Massachusetts. This Core Habitat is located less than 10 km from other habitats for the Water-willow Stem Borer, including Core Habitats in Carver, Rochester, and Middleborough. This proximity allows for occasional movement of individual moths among all of these sites, which is important to maintain viable populations of this species.

### Vertebrates

This Core Habitat encompasses significant habitat for Spotted Turtles with large areas of wetlands interspersed with forested uplands. It also provides important habitat for birds characteristic of upland forests and forested wetlands in southeastern Massachusetts. The area may also provide habitat for Eastern Box Turtles, Blue-spotted Salamanders, and Four-toed Salamanders.

## Core Habitat BM1208

This large Core Habitat comprises shorelines, forested wetlands, and uplands around Assawompsett, Great Quittacas, and Little Quittacas Ponds, as well as several miles of the Nemasket River and its tributaries. These areas contain important nesting and feeding habitats for Bald Eagles and other birds, habitat for rare turtles, a large example of a Forest Seep natural community, and several populations of rare pondshore plant species, including the Endangered Round-Fruited Loosestrife.

### Natural Communities

The part of this Core Habitat in Lakeville contains a relatively large, although young, Forest Seep community that is well-buffered by naturally vegetated land. Forest Seeps are hardwood forests found on wet slopes, where groundwater seeps out of the earth. The overstory is similar to that of the surrounding forest, but many typical wetland ferns, shrubs, and other plants occur as well.

### Plants

Several rare plant populations are found along the shores and islands of this large pond complex. Most notable may be the two high-quality populations of the Endangered Round-Fruited Loosestrife, which grows along acidic ponds associated with large wetland complexes.

### Vertebrates

This Core Habitat contains important nesting and feeding habitat for Bald Eagles, and habitat for rare marsh birds and migrating waterfowl. Northern Parula warblers also nest here. Riparian areas and adjacent wetlands and uplands along the Nemasket River and Fall Brook provide habitat for Spotted Turtles and Wood Turtles. Spotted Turtles also may occur in smaller wetlands and upland areas along the edges of Assawompsett Pond.

# BioMap: Core Habitat Summaries

## Middleborough

### Core Habitat BM1225

This wetland-dominated Core Habitat encompasses Cedar Swamp in Rochester, as well as portions of Black Brook and adjacent wetlands in Middleborough. Included in the Core Habitat is one of the state's largest Alluvial Red Maple Swamps that provides habitat for plants such as the Endangered Gypsywort. It also contains significant habitat for Spotted Turtles and Four-toed Salamanders, and the shallow wetlands support the rare Water-willow Stem Borer moth.

#### Natural Communities

This Core Habitat contains a variety of high-quality bogs and forested swamps. One of the largest mature and disturbance-free Alluvial Red Maple Swamps in the state extends along a brook in both towns in this Core Habitat. Alluvial Red Maple Swamps are a type of Red Maple Swamp that occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, resulting in an unusual set of associated trees and plants.

#### Plants

This Core Habitat contains one of the state's two most viable occurrences of the Endangered Gypsywort, a member of the mint family which is found here in an Alluvial Red Maple Swamp.

#### Invertebrates

Dispersed throughout this Core Habitat are shallow wetlands with Water-willow, which are inhabited by the Water-willow Stem Borer moth, a Threatened species that is found nowhere in the world outside of Massachusetts. This Core Habitat is located less than 10 km from other habitats for the Water-willow Stem Borer, including Core Habitats in Rochester and Middleborough. This proximity allows for occasional movement of individual moths between all of these sites, which is important to maintain a viable population of this species. This Core Habitat also includes the northern portion of Snipatuit Pond, which is habitat for the New England Bluet damselfly. Most of this Core Habitat appears to be unprotected.

#### Vertebrates

This Core Habitat encompasses Cedar Swamp and Black Brook and adjacent wetlands. It provides significant habitat for Spotted Turtles as well as habitat for Four-toed Salamanders. The area may also support Marbled Salamanders, Wood Turtles, and Northern Parula warblers, and it contains habitat for birds that are characteristic of forested wetlands.

# Living Waters: Species and Habitats

## Middleborough

### Core Habitat LW070

#### Plants

| Common Name | Scientific Name | Status |
|---|---|---|
| Featherfoil | *Hottonia inflata* | Watch Listed |

### Core Habitat LW122

#### Fishes

| Common Name | Scientific Name | Status |
|---|---|---|
| Bridle Shiner | *Notropis bifrenatus* | Special Concern |

### Core Habitat LW163

#### Invertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Eastern Pondmussel | *Ligumia nasuta* | Special Concern |
| Tidewater Mucket | *Leptodea ochracea* | Special Concern |

### Core Habitat LW228

#### Invertebrates

| Common Name | Scientific Name | Status |
|---|---|---|
| Tidewater Mucket | *Leptodea ochracea* | Special Concern |

# Living Waters: Core Habitat Summaries

## Middleborough

### Core Habitat LW070

A population of Featherfoil, an uncommon and unusual-looking aquatic plant with feathery leaves, is growing in shallow areas of this streamside swamp in Middleborough. Since this plant is rare in most surrounding states, we must safeguard the Massachusetts populations of this species to avoid further declines in New England.

### Core Habitat LW122

This Core Habitat in a section of the Nemasket River supports one of eight known populations of Bridle Shiner in the Taunton Watershed. This fish Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

### Core Habitat LW163

The large Assawompset Pond complex (Assawompset, Pocksha, and Great Quittacas Ponds) supports a very diverse group of freshwater mussels. Seven of the state's twelve mussel species are present, including the rare Tidewater Mucket and the Eastern Pondmussel. The populations of these rare mussels are particularly significant because juvenile and adult specimens have been observed, suggesting that these mussels are reproducing successfully. This pond complex supplies much of New Bedford's drinking water, and as such receives minimal recreational use and the shorelines remain largely undeveloped.

### Core Habitat LW228

The Taunton River supports six of the state's twelve freshwater mussel species, including the rare Tidewater Mucket. This species is more likely to be found in ponds, and this occurrence is one of only two known river occurrences in Massachusetts. The Taunton River is slow-flowing, and has a river bed of softer sands and silts, although mussels are most often found in the sections with firmer substrates.

# Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the

Natural Heritage &
Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.